Amendments to the Claims

Please cancel Claims 3, 5, 17, 19, 24, 29 and 42-46. Please amend Claims 1, 16, 18, 20, 25, 28, 71 and 72. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) A vascular repair device, comprising:

a tubular graft body having a longitudinal axis and a circumference;

a structural framework having at least two Z-stents connected circumferentially to said graft body;

a curved, metallic, longitudinal support member, that is on one side of a plane parallel to and bisecting said longitudinal axis of said graft body;

having substantially asymptotic ends,

connected to said graft body,

having a length,

having a centerline at said graft body parallel to said longitudinal axis, and

when viewed in an orientation where said longitudinal axis and said centerline are aligned with one another, said support member being substantially reverse-mirror symmetrical with respect to said longitudinal axis and said length; and

on a second side of the plane, the graft body being free of the longitudinal support member.

2. (Previously Presented) The vascular repair device, according to claim 1, wherein said longitudinal support member is of a material selected from the group consisting of nitinol, stainless steel, Cobalt Chrome, and titanium alloys.

3. (Canceled)

4. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member has a partial helix shape.

5. (Canceled)

6. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member is connected to said graft body independent of said structural framework.

7. (Withdrawn) The vascular repair device according to claim 1, wherein said longitudinal support member is connected to one of said stents of said structural framework.

8. (Withdrawn) The vascular repair device according to claim 7, wherein said longitudinal support member has an end connected to said one stent.

9. (Withdrawn) The vascular repair device according to claim 7, wherein said longitudinal support member has two ends each connected to respective ones of said stents of said structural framework.

10. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member is pre-formed in said curved shape.

11. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member has rounded ends.

12. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member has a looped end with a curved longitudinal extremity.

13. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member has two looped ends each with curved longitudinal extremities.

14. (Original) The vascular repair device according to claim 1, wherein said longitudinal support member is shorter than said structural framework.

15. (Canceled)

16. (Currently Amended) A vascular repair device, comprising:

a tubular graft body having a longitudinal axis;

a structural framework having at least two Z-stents connected circumferentially to said tubular graft body; and

a curved longitudinal support member on one side of a plane parallel to and bisecting a longitudinal axis of said graft body, the longitudinal support member being substantially reverse-mirror symmetrical with respect to said longitudinal axis and having substantially asymptotic ends, and being connected to said graft body independent of said structural framework and having two ends, at least one of said ends having a longitudinal extremity curved back upon itself, and on the other side of the plane, the graft body being free of the longitudinal support member.

17. (Canceled)

18. (Currently Amended) A vascular repair device, comprising:

a tubular graft body having a longitudinal axis and having a proximal end and a distal end;

a structural framework having at least two stents each respectively connected to said tubular graft body adjacent said proximal end and said distal end and defining a separation distance there between; and

a curved longitudinal support member having substantially asymptotic ends, being shorter than said separation distance and being connected to said graft body on one side of a plane parallel to and bisecting a longitudinal axis of said graft body, the longitudinal ~~supporting being~~ support member being substantially reverse-mirror symmetrical with respect to said longitudinal axis and between said at least two stents to form a gimbal at at least one of said proximal and distal ends of said graft body, and, on the other side of the plane, the graft body being free of the longitudinal support member.

19. (Canceled)

20. (Currently Amended) A vascular repair device, comprising:

a tubular graft body having a longitudinal axis and having a proximal end and a

distal end;

a structural framework having at least first and second pairs of Z-stents each respectively connected to said graft body adjacent said proximal end and said distal end, said stents of each of said first and second pairs of stents being separated from one another at said graft body to define a respective outer stent and a respective inner stent; and

a curved longitudinal, metallic support member having substantially asymptotic ends being substantially reverse-mirror symmetrical with respect to said longitudinal axis and on one side of a plane parallel to and bisecting a longitudinal axis of said graft body and connected to said graft body and an entirety thereof extending between,

said inner stent of said first pair of stents, and

said outer stent of said second pair of stents, and, on the other side of the plane, the graft body being free of the longitudinal support member.

21. (Previously Presented) The vascular repair device according to claim 20, wherein said support member is connected to said graft body and said entirety thereof extends between both of said inner stents of said pairs of stents.

22. (Withdrawn) The vascular repair device according to claim 20, wherein said support member has ends each connected to said inner stent of each of said two pairs of stents.

23. (Withdrawn) The vascular repair device according to claim 20, wherein:

said support member has ends; and

at least one of said ends is connected to said inner stent of one of said two pairs of stents.

24. (Canceled)

25. (Currently Amended) A vascular repair device, comprising:

a tubular graft body having a longitudinal axis, a circumference, a proximal end and a distal end;

a structural framework having at least two pairs of stents each respectively

connected to said graft body adjacent said proximal end and said distal end, said stents of each of said pairs of stents being separated from one another at said graft body to define a respective outer stent and a respective inner stent;

a curved longitudinal support member having substantially asymptotic ends and on one side of a plane parallel to and bisecting a longitudinal axis of said graft body, the curved longitudinal support being substantially reverse-mirror symmetrical with respect to said longitudinal axis and,

having two ends,

having a portion between said two ends curved partially around said circumference of said tubular graft body, and

being connected to said graft body between both of said inner stents of said two pairs of stents such that longitudinal contraction of the graft body is substantially prevented where the support member is connected to the graft body, and, on the other side of the plane, the graft body being free of the longitudinal support member.

26. (Original) The vascular repair device according to claim 25, wherein said support member is connected to said graft body without touching said inner stents.

27. (Original) The vascular repair device according to claim 25, wherein said support member is connected to said graft body to touch at least one of said inner stents.

28. (Currently Amended) A vascular repair device, comprising:

a tubular graft body having a longitudinal axis and first and second ends;

a structural framework having at least three stents, two of said stents being connected to said tubular graft body adjacent said first end, said two stents being separated from one another on said graft body to define an outer stent and an inner stent, a third of said stents being connected to said tubular graft body adjacent said second end; and

a curved longitudinal support member having substantially asymptotic ends and on one side of a plane parallel to and bisecting a longitudinal axis of said graft body, the longitudinal support member having two ends and being substantially reverse-mirror

symmetrical with respect to said longitudinal axis and connected to said graft body between said inner stent and said third stent without touching said inner stent and said third stent such that longitudinal contraction of the graft body is substantially prevented where the support member is connected to the graft body, and, on the other side of the plane, the graft body being free of the longitudinal support member.

29. (Canceled)

30. (Withdrawn) A vascular repair device, comprising:

a tubular graft body;

a structural framework having at least two stents;

a first of said stents being connected to said tubular graft body along an entirety of said first stent;

a second of said stents having a periodically changing shape to define proximal apices having given radii of curvature and distal apices having radii of curvature smaller than said given radii of curvature; and

said second stent being connected to said tubular body at said distal apices.

31. (Withdrawn) The vascular repair device according to claim 30, wherein said second stent is connected to said tubular body only at said distal apices.

32. (Withdrawn) The vascular repair device according to claim 30, wherein said first stent has alternating proximal and distal apices with substantially equal radii of curvature.

33. (Withdrawn) The vascular repair device according to claim 32, wherein said radii of curvature is between approximately 0.1 mm and approximately 3.0 mm.

34. (Withdrawn) The vascular repair device according to claim 32, wherein said radii of curvature is approximately 0.5 mm.

35. (Withdrawn) The vascular repair device according to claim 30, wherein:

said graft body has a proximal end;

said second stent is connected at said proximal end; and

said proximal apices extend away from said proximal end.

36. (Withdrawn) The vascular repair device according to claim 35, wherein:

said first stent has alternating proximal and distal apices with substantially equal radii of curvature; and said distal apices of said second stent have radii of curvature substantially equal to said radii of curvature of said proximal and distal apices of said first stent.

37. (Withdrawn) The vascular repair device according to claim 36, wherein said proximal apices of said second stent have radii of curvature approximately equal to 1.5 mm and said distal apices of said second stent have radii of curvature approximately equal to 0.5 mm.

38. (Withdrawn) The vascular repair device according to claim 30, wherein:

said first stent has a given amplitude; and

said second stent has an amplitude greater than said given amplitude.

39. (Withdrawn) A vascular repair device, comprising:

a tubular graft body;

a structural framework having at least two stents;

a first of said stents:

having a periodically changing shape to define first proximal apices having first radii of curvature and first distal apices having radii of curvature substantially equal to said first radii of curvature; and

being connected to said tubular graft body along an entirety of said first stent; and

a second of said stents:

having a periodically changing shape to define second proximal apices having second radii of curvature larger than said first radii of curvature and second distal apices having radii of curvature substantially equal to said first radii of curvature; and

being connected to said tubular body only at said second distal apices.

40-46. (Canceled)

47. (Original) The vascular repair device according to claim 1, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

48. (Original) The vascular repair device according to claim 1, wherein:

said at least two stents each have apices;

said structural framework has a distal-most stent; and

said distal-most stent has at least one more apex than another of said at least two stents.

49-50. (Canceled)

51. (Original) The vascular repair device according to claim 16, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

52. (Original) The vascular repair device according to claim 16, wherein:

said at least two stents each have apices;

said structural framework has a distal-most stent; and

said distal-most stent has at least one more apex than another of said at least two stents.

53. (Original) The vascular repair device according to claim 18, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

54. (Original) The vascular repair device according to claim 18, wherein:

said at least two stents each have apices;

said structural framework has a distal-most stent; and

said distal-most stent has at least one more apex than another of said at least two stents.

55. (Original) The vascular repair device according to claim 20, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

56. (Original) The vascular repair device according to claim 20, wherein:

said stents each have apices;

one of said pairs of stents adjacent said distal end has a distal-most stent; and

said distal-most stern has at least one more apex than another of said stents.

57. (Original) The vascular repair device according to claim 25, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

58. (Original) The vascular repair device according to claim 25, wherein:

said stents each have apices;

one of said pairs of stents adjacent said distal end has a distal-most stent; and

said distal-most stent has at least one more apex than another of said stents.

59. (Original) The vascular repair device according to claim 28, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

60. (Original) The vascular repair device according to claim 28, wherein:

said stents each have apices;

one of said stents is a distal-most stent; and

said distal-most stent has at least one more apex than another of said stents.

61. (Withdrawn) The vascular repair device according to claim 30, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

62. (Withdrawn) The vascular repair device according to claim 30, wherein:
said first and second stents each have apices; and
said first stent has at least one more apex than said second stent.

63. (Withdrawn) The vascular repair device according to claim 39, wherein said graft body has a diameter at least as large as a diameter of a vessel into which said graft body is to be placed.

64. (Withdrawn) The vascular repair device according to claim 39, wherein said first stent has at least one more apex than said second stent.

65. (Original) The vascular repair device according to claim 1, wherein:
said graft body has a longitudinal extent defining a longitudinal direction; and
said stents have a substantially linear profile in said longitudinal direction.

66. (Original) The vascular repair device according to claim 65, wherein said stents have a linear longitudinal profile.

67. (Original) The vascular repair device according to claim 65, wherein said stents have a circular cross-sectional shape.

68. (Withdrawn) The vascular repair device according to claim 65, wherein said stents have a non-circular cross-sectional shape.

69. (Withdrawn) The vascular repair device according to claim 68, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

70. (Canceled)

71. (Currently Amended) The vascular repair device according to claim [[70]] 16, wherein said stents have a linear longitudinal profile.

72. (Currently Amended) The vascular repair device according to claim [[70]] 16, wherein said stents have a circular cross-sectional shape.

73. (Withdrawn) The vascular repair device according to claim 70, wherein said stents have a non-circular cross-sectional shape.

74. (Withdrawn) The vascular repair device according to claim 73, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

75. (Original) The vascular repair device according to claim 16, wherein:

said graft body has a longitudinal extent defining a longitudinal direction; and

said stents have a substantially linear profile in said longitudinal direction.

76. (Original) The vascular repair device according to claim 75, wherein said stents have a linear longitudinal profile.

77. (Original) The vascular repair device according to claim 75, wherein said stents have a circular cross-sectional shape.

78. (Withdrawn) The vascular repair device according to claim 75, wherein said stents have a non-circular cross-sectional shape.

79. (Withdrawn) The vascular repair device according to claim 78, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

80. (Original) The vascular repair device according to claim 18, wherein:

said graft body has a longitudinal extent defining a longitudinal direction; and

said stents have a substantially linear profile in said longitudinal direction.

81. (Original) The vascular repair device according to claim 80, wherein said stents have a linear longitudinal profile.

82. (Original) The vascular repair device according to claim 80, wherein said stents have a circular cross-sectional shape.

83. (Withdrawn) The vascular repair device according to claim 80, wherein said stents have a non-circular cross-sectional shape.

84. (Withdrawn) The vascular repair device according to claim 83, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

85. (Original) The vascular repair device according to claim 20, wherein:

said graft body has a longitudinal extent defining a longitudinal direction; and

said stents have a substantially linear profile in said longitudinal direction.

86. (Original) The vascular repair device according to claim 85, wherein said stents have a linear longitudinal profile.

87. (Original) The vascular repair device according to claim 85, wherein said stents have a circular cross-sectional shape.

88. (Withdrawn) The vascular repair device according to claim 85, wherein said stents have a non-circular cross-sectional shape.

89. (Withdrawn) The vascular repair device according to claim 88, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a

twenty-sided shape.

90. (Original) The vascular repair device according to claim 25, wherein:
said graft body has a longitudinal extent defining a longitudinal direction; and
said stents have a substantially linear profile in said longitudinal direction.

91. (Original) The vascular repair device according to claim 90, wherein said stents have a linear longitudinal profile.

92. (Original) The vascular repair device according to claim 90, wherein said stents have a circular cross-sectional shape.

93. (Withdrawn) The vascular repair device according to claim 90, wherein said stents have a non-circular cross-sectional shape.

94. (Withdrawn) The vascular repair device according to claim 93, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

95. (Original) The vascular repair device according to claim 28, wherein:
said graft body has a longitudinal extent defining a longitudinal direction; and
said stents have a substantially linear profile in said longitudinal direction.

96. (Original) The vascular repair device according to claim 95, wherein said stents have a linear longitudinal profile.

97. (Original) The vascular repair device according to claim 95, wherein said stents have a circular cross-sectional shape.

98. (Withdrawn) The vascular repair device according to claim 95, wherein said stents have a non-circular cross-sectional shape.

99. (Withdrawn) The vascular repair device according to claim 98, wherein said non-circular

cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

100. (Withdrawn) The vascular repair device according to claim 30, wherein: said graft body has a longitudinal extent defining a longitudinal direction; and said stents have a substantially linear profile in said longitudinal direction.

101. (Withdrawn) The vascular repair device according to claim 100, wherein said stents have a linear longitudinal profile.

102. (Withdrawn) The vascular repair device according to claim 100, wherein said stents have a circular cross-sectional shape.

103. (Withdrawn) The vascular repair device according to claim 100, wherein said stents have a non-circular cross-sectional shape.

104. (Withdrawn) The vascular repair device according to claim 103, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

105. (Withdrawn) The vascular repair device according to claim 39, wherein:

said graft body has a longitudinal extent defining a longitudinal direction; and

said stents have a substantially linear profile in said longitudinal direction.

106. (Withdrawn) The vascular repair device according to claim 105, wherein said stents have a linear longitudinal profile.

107. (Withdrawn) The vascular repair device according to claim 105, wherein said stents have a circular cross-sectional shape.

108. (Withdrawn) The vascular repair device according to claim 105, wherein said stents have a non-circular cross-sectional shape.

109. (Withdrawn) The vascular repair device according to claim 108, wherein said non-circular cross-sectional shape is selected from the group consisting of a ten-sided shape, a twelve-sided shape, a fourteen-sided shape, a sixteen-sided shape, an eighteen-sided shape, a twenty-sided shape.

110. (Previously Presented) The vascular repair device of claim 1, wherein a proximal portion of the curved longitudinal support member is relatively parallel to an axis of the tubular graft body at a first degree, and a distal portion of the curved longitudinal support member is relatively parallel to the axis of the tubular graft body at a second degree, the second degree being different than the first degree.

111. (Previously Presented) The vascular repair device of claim 110, wherein the proximal and distal ends of the curved longitudinal support extend asymptotically to the first and second degree, respectively.

112. (Previously Presented) The vascular repair device of claim 111, wherein the tubular graft body is about 20 cm long, and wherein the first and second degrees are separated by an angle in a range of between 80 and 110 degrees.

113. (Previously Presented) The vascular repair device of claim 111, wherein the tubular graft body is about 9 cm long, and wherein the first and second degrees are separated by an angle in a range of between 30 and 60 degrees.

114. (Previously Presented) The vascular repair device of claim 113, wherein the first and second degrees are separated by an angle of about 45 degrees.